Z/009/60/010/02/007/026
E142/E235

AUTHORS: Kovařík, B., Beníšek, J., and Zavřel, J

TITLE: The Preparation of Butadiene from Alcohol

PERIODICAL: Chemický Průmysl, 1960, Vol 10, Nr 2, pp 81-83

ABSTRACT: The authors studied the properties of catalysts for the preparation of butadiene from alcohol by the Lebedev method. This process has been described in various publications (Refs 1 to 6) but the quoted reaction temperatures vary between 270 to 450°C, the quoted yields vary between 45 and 72% and the quoted life of the catalyst varies between a few weeks and several months. Very little information is available on the composition and activity of the catalysts. Table 1 gives data on composition and activity of the most satisfactory catalysts described in literature. They all contain as basic components MgO and SiO_2 whereas the original Lebedev catalyst consisted of a mixture of zinc and aluminium oxides (Ref 1). The authors prepared some of the catalysts described in literatures and further types of catalysts which were tested on laboratory as well as on semi-pilot plant scale. The catalyst was activated for 24 hours in an air current

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The Preparation of Butadiene from Alcohol

at 550°C. The experiments were carried out under atmospheric pressure; the tests lasted for 6 hours. On the semi-pilot plant scale 16 hours cycle reaction were interrupted by 3-hour regeneration cycles. The yield of butadiene was estimated by absorption from the contact gas. Ethyl alcohol was analysed in the condensates by esterification with formic acid in the presence of H_2SO_4. The preparation of the $MgO/SiO_2/Cr_2O_3$ catalyst is described. Several types of this catalyst with varying percentage composition of the 3 components were tested and best results were obtained when the catalyst consisted of 79% MgO, 19% SiO_2 and 2% Cr_2O_3. The preparation of a modified catalyst consisting of MgO/SiO_2/kaolin/Cr_2O_3 is described. Multi-component catalyst P7 contained SiO_2, MgO and catalyst promotors of oxides of group 2 and 8 of the periodic table. This type of catalyst increased the conversion and yield of the butadiene and reduced the optimum reaction temperatures; its preparation was described in an earlier publication (Ref 13). The pro-

Card 2/4 perties of these three types of catalysts are compared in

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Table 2. The 3-component catalyst showed a higher activity and selectivity. The original 62% yields were maintained for a fortnight during pilot plant experiments carried out at 370°C; after a further week due to heating to 560°C conversion yields decreased by one third. The 4-component catalyst MgO/SiO_2/kaolin/Cr_2O_3 is more active than the 3-component catalyst and shows the same selectivity; higher conversions of ethyl alcohol to butadiene are achieved. It was tested on a pilot plant scale for 7 weeks at temperatures varying between 365 to 370°C. During the first 2 weeks 56% conversion and 59% yields were obtained; during each subsequent week the yields fell by about 2% at the same degree of conversion. The multi-component catalyst P7 gave 66 to 68% yields at temperatures between 30 to 40°C during the first 400 hours; after 900 hours the yields decreased to 60% and the rate of conversion from 36 to 34%. Optimum temperature under industrial conditions is around 370°C; under laboratory conditions 400°C. All types of catalysts show a relatively small degree of activity. About 50 g of butadiene are produced from 300 ml of 85% ethyl alcohol,

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The Preparation of Butadiene from Alcohol

using 1 litre of catalyst per hour. The life of the P7 catalyst is about 800 hours when 16 hour reaction cycles are interrupted by 3-hour regeneration cycles. There are 2 figures, 2 tables and 14 references, 4 of which are English, 2 Soviet, 5 Czech, 1 German, 1 Polish and 1 Hungarian.

ASSOCIATION: Výzkumný ústav syntetického kaučuku, Gottwaldov
(Research Institute for Synthetic Rubber, Gottwaldov)

SUBMITTED: June 30, 1959

Card 4/4

BENISEK, Ladislav; DOKOVIC, Milovan

Calometric determination of non-detergents. Chem prum 12 no.4:183-185 Ap '62.

1. Vyzkumny ustav vlnarsky, Brno.

BENISKA, J.

BENISKA, J. - "Investigation of the Influence of Zinc Oxide on the Process of the Vulcanization of Rubber." Min Higher Education USSR, Moscow Inst Fine Chemical Technology imeni M. V. Lomonosov, Moscow, 1955.
(Dissertations for Degree of Candidate in Chemical Sciences)

SO: Knizhnaya letopis', No. 33, 1955, pp 85-87

CZECHOSLOVAKIA / Chemical Technology, Chemical Products and Their Application. Caoutchouc, Natural and Synthetic. Rubber. H-31

Abs Jour : Ref Zhur - Khimiya, No 5, 1959, No. 17728

Author : Beniska, J.; Dogadkin, B.

Inst : ~~Not given~~

Title : Effect of Promoters on the Vulcanization Process I. Action of ZnO on the Rate of Reaction Involving Addition of Sulfur to Caoutchouc

Orig Pub : Chem. zvesti, 1958, 12, No 5, 304-311

Abstract : Effects of ZnO and stearic acid (I) on the kinetics of S addition to SKB caoutchouc without accelerating agents and in mixtures containing such accelerating agents as mercaptobenzothyazole (II) and diphenylguanidine were investigated. ZnO does not affect the above reaction of mixtures of SKB from which the traces of caustic were

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H-128

CZECHOSLOVAKIA / Chemical Technology, Chemical Products and Their Application. Caoutchouc, Natural and Synthetic. Rubber. H-31

Abs Jour : Ref Zhur - Khimiya, No 5, 1959, No. 17728

removed and which contained no accelerators. In the mixtures with II ZnO causes retardation and with I causes acceleration of the addition reaction of S with caoutchouc. In the presence of ZnO, zinc sulfide is formed during vulcanization with the reaction being further promoted by neozone D and I.

Card 2/2

Country : Czechoslovakia H-31
Category :

Abs. Jour. : 48044

Author : Beniska, J.; Dogadkin, B.
Institut. :
Title : Effects of Activators on Vulcanization Process. II. Effect of Zinc Oxide on Structure of the Vulcanizates.
Orig. Pub. : Chem. zvesti, 1958, 12, No 6, 376-381

Abstract : Study of the effect of ZnO and stearic acid (I) on structure of SKB-vulcanizates of mercaptobenzothiazole containing mixes, as determined on the basis of swelling kinetics data. ZnO in the presence of I affects substantially the rate and extent of cross-linking of rubber: activates linking of rubber molecules by sulfur bi-radicals, which results in the formation, primarily, of polysulfide bonds, and an oxidation of sulfhydryl groups of the rubber, which leads to the formation of mono-, di-, and polysulfide bonds, as a result of which new cross-linkages are formed containing fewer S-atoms. Communication I see RZhKhim, 1959, No 5, 17728. -- According to the authors' summary.

E

: CZECHOSLOVAKIA

: Chemical Technology. Chemical Products and Their Applications. Caoutchouc. Natural and*

: RZhKhim., No. [illegible] 1959, No. 84214

AUTHOR : Benisko, J.

INST. : —

TITLE : Effect of Activators on the Vulcanization Process (III). Action of Zinc Oxide on the Vulcanization of Mixtures Containing Diphe-**

ORIG. PUB. : Chem. Zvesti, 1958, 12, No. 10, [illegible]

ABSTRACT : Effect of ZnO on the rate of S addition (R) and on the formation of cross-bonds (I) of the mixtures of SKB-35 and NK containing diphenylguanidine (I) was investigated. ZnO has no practical effect on R when present in the mixtures of SKB-35 and NK as well as on P in the mixtures, containing SKB-35. Mixtures containing NK, ZnO affects P. The number of

*Synthetic Rubber.
**nylguanidine.

CARD: 1/2

E - 134

H

COUNTRY :
CATEGORY :

ABS. JOUR. : RZhKhim., No. [illegible] 1959, No. 48814

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : cross-bonds in the mixtures with I are greater
Cont'd than in similar mixtures containing mercapto-
benzothiazol. ZnS is formed in the vulcaniza-
tion, its quality depends on the type of pro-
moter used in a rubber. The greatest quantity
of ZnS forms in the mixtures containing ME and
in the presence of I. For Part II see Ref. Zhur
Khimiya, 1959, No 13, 48814.

CARD: 2/2

The effect of the combination of accelerators on vulcanization of natural rubber. I. The effect of diphenylguanidine in mixture with mercaptobenzothiazole. J. Beniska and P. Rosner (Slovenskā vysoká škola tech., Bratislava, Czech.). *Chem. zvesti* 13, 304–12(1959)(Czech; summary).—In mixts. with diphenylguanidine (Dimax) (I) a higher amt. of cross linking occurs with a greater firmness than in similar mixts. with mercaptobenzothiazole (Captax) (II) but the optimum of vulcanization is reached later. Up to 3 parts ZnO per 100 parts of rubber increases the speed of cross-linking. Vulcanization of mixts. with a combination of I and II occurs faster and the firmness is greater than in mixts. with individual accelerators. The activation effect of I is primarily in the activation of cross-linking. There is no chem. compd. formed between I and II during the vulcanization.

Jan Micka

15.9000 2209, 1436, 1451

23680
Z/043/61/000/004/001/001
D222/D305

AUTHORS: Beniska, Jozef, Doctor, Engineer and Staudner, Emil, Engineer, Candidate of Sciences

TITLE: Modification of rubbers, I - Investigation of rubber modification during plasticization on two-roll mills

PERIODICAL: Chemické zvesti, no. 4, 1961, 292-305

TEXT: Modified rubbers, i.e. copolymers with natural or synthetic rubber as one of the initial materials, have distinctive properties and are of great technical interest. Numerous studies were made in this field, but most of the tests were performed on laboratory-size equipment only. This paper investigates the possibility of preparing modified rubbers with available production means, two-roll mills, in the presence of air. Tests were performed with pale crepe (0.48% N_2, 2.82% acetone extract, 0.47% ash, plasticity 3.000°C, Defo, limiting viscosity index $4.3 \cdot 10^2$ ml/g); Butadiene-styrene "Buna S3" (0.27% N_2, 22-23% styrene, 2.7%

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Z/043/61/000/004/001/001
D222/D305

Modification of rubbers . . .

phenyl-naphthylamine, plasticity 2.700° Defo, limiting viscosity index in benzene 3.8 · 10^2 ml/g); and butadiene-acrylonitrile "Polysar N301" (8.48% N_2; 8.10% N_2 after extraction, which represents 30.70% acrylonitrile, plasticity 1.500° Defo, limiting viscosity index in acetone 0.93 · 10^2 ml/g). These rubbers were used in 1:1 mixtures in the following combinations: a) pale crepe-Buna; b) pale crepe - Polysar; and c) Buna - Polysar. For comparison of properties, the two rubber components were both, simultaneously and separately plasticized. For simultaneous plasticization, the rubbers were mixed by running them several times over the heated rolls (70 - 75° C) at a distance between rolls 1-2 mm. The uniform mixture was then plasticized on chilled rolls (20-25°C) at a distance between rolls of 0.1-0.15 mm for periods of 5, 10, and 20 min. For separate plasticization, each rubber was plasticized in the same way, and, after a rest period of one day, mixed

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Modification of rubbers . . .

together on heated rolls (67 - 75°C) for 2-3 min. The rolls of the two-roll mills were 400 mm long and 150 mm in diameter; the speed of the first roll was 21.5 rpm, that of the second roll was higher, the resulting friction was 1:1.2 . The rolls could be either chilled with water or heated with steam. The progress of rubber modification was investigated by: a) measuring the plasticity on a Defo plastometer (according to ČSN 62410) depending on the plasticization time; b) measuring the limiting viscosity index on an Ubbelohde viscosimeter type Ia at 20 ± 0.05°C, depending on the plasticization time; c) selective precipitation(of rubbers solved in benzene, precipitated with acetone) depending on the plasticization time; d) selective dissolution (for crepe-Buna mixtures where selective precipitation is not applicable) and e) measuring the swelling in benzene with a Fedotov apparatus. The latter test method for plasticized rubbers also allows determination of the point when dissolution starts to exceed swelling.

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Modification of rubbers . . .

Generally, it was found that cold plasticization has rather differing effects on various rubber types. The most rapid degeneration was observed for pale crepe, the Defo value of which dropped from 3,000 to 100 after 10 min of plasticization. Simultaneously plasticized mixtures have considerably lower plasticity than separately plasticized mixtures, however, this difference lessens with increasing plasticization period. Parallel to the plasticity development, the viscosity of simultaneously plasticized mixtures drops more slowly than that of separately plasticized mixtures. The assumption that these differences in plasticity and limiting viscosity index are caused by the formation of modified rubbers during simultaneous plasticization could be confirmed by the results of selective precipitation and dissolution. The modification occurs in the first phases of simultaneous plasticization. After 20 minutes, 7% of the total amount of pale crepe were bound to Polysar, 8.5% of pale crepe were bound to Buna, and 14% of Buna to

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Modification of rubbers . . .

Polysar. It can be expected that the actual amounts of bound rubber are higher than those calculated by the results of selective precipitation and dissolution, since portions of the copolymer may be retained in the precipitate or in the undissolved part respectively. This is especially true when the less-polar component prevails in the copolymer molecule. The observed increased resistivity of simultaneously plasticized rubber mixtures to solvents (benzene) is also attributable to copolymer formation. Corresponding results were obtained in swelling tests. As confirmed by such tests, the largest degradation and macroradical formation occurs during the first phases of plasticization; the yield of modified rubbers increases only slightly during longer plasticization periods; the total yield of modified rubbers, produced by cold plasticization, is rather small. Compared with mechanically mixed rubbers modified rubbers have rather different physical properties, most distinctive is their increased resistance

Card 5/6

Modification of rubbers . . .

to non-polar solvents. There are 10 figures, 2 tables and 12 references: 7 Soviet-bloc and 5 non-Soviet-bloc. The references to English-language publications read as follows: W.F. Watson, D.J. Wilson; J. Sci. Instr. 31, 398 (1954); D.J. Angier, W.F. Watson, Trans IRI 33, 22 (195"); W.F. Watson, D.J. Wilson; Rubb. Plast Age 38, 982 (1958); D.J. Angier, E.D. Farle, W.F. Watson; Trans IRI, 24, 8, (1958).

ASSOCIATION: Katedra organickej technológie Slovenskej vysokej školy technickej v Bratislava (Department of Organic Technology, Slovak Institute for Technology, Bratislava)

SUBMITTED: October 24, 1960

STAUDNER, Emil, inz.; BENISKA, Jozef, doc., inz.

Modification of caoutchouc (II). Examination of the modification of caoutchouc in making plastics on a worm pressing machine. Chem zvesti 16 no.6:431-438 Je '62.

1. Katedra organickej technologie, Slovenska vysoka skola technicka, Bratislava. Adresa autorov: Bratislava, Kollarovo namesti 2, Chemicky pavilon, Slovenska vysoka skola technicka.

L 17510-63 EPR/EWP(j)/EPF(c)/EDS AFFTC/ASD Ps-4/Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3001796 Z/0043/63/000/005/0330/0336

AUTHOR: Beniska, J. (Docent, Engineer, Science Candidate), Staudner, E. (Engineer) 70 69

TITLE: Modifications of rubbers (Part 3). Study of the preparation of modified polymers based on plasticized fubber [presented at the high polymer chemistry conference in Saolensk, 12-15Sep62]

SOURCE: Chemicke zvesti, no. 5, 1963, 330-336

TOPIC TAGS: rubber plasticizing, peroxide formation, plasticizing radical, acrylonitrile reaction rate

ABSTRACT: Authors present a method of preparation of modified polymers of rubber plasticized by vinyl monomers. The peroxides or hydroperoxides that are formed during cold plasticizing are decomposed by higher temperature and

that they are formed by the reaction of oxygen with mechanically broken chemical

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L 17510-63
ACCESSION NR: AP3001796

bonds in the rubber molecule. The highest plasticizing effect, that is the greatest reduction in molecular weight during cold plasticizing, is shown in the first 10-15 minutes. Subsequently there is very little change; formation of peroxides follows the same pattern. Peroxides are stable at low temperatures but on heating they decompose as follows: ROOH to RO + OH; the 2 resulting radicals initiate polymerization of monomers. RO radicals form modified polymers, OH form homopolymers. When acrylonitrile is used for modification, only small amounts of homopolymer are formed, because OH radical reacts with the methylene group of rubber, forming a new macroradical. This modification is characterized by two different reaction velocities; the first two hours the reaction is fast, later it is slow. It is assumed that the second phase is influenced by decomposition of peroxides, by the diffusion of rubber monomer into polymers and by trapped radicals. If heating is interrupted for 12 hours

L 17511-63 EPR/EWP(j)/EPF(c)/BDS AFFTC/ASD Ps-4/Pq-4/Pr-4 RM/WW

ACCESSION NR: AP3001797 Z/0043/63/000/005/0337/0345 75 72

AUTHOR: Staudner, E. (Engineer), Benička, J. (Docent, Engineer, Science Candidate), Stoklasa, K., Mosny, J., Dohnalyos, J.

TITLE: Modifications of rubbers (Part 4). Study of the composition of mixtures resulting from modifications of butadiene-styrene rubber by polystyrene [presented at the high polymer chemistry conference in Smolensk 12-15 Sep 1962]

SOURCE: Chemicke zvesti, no. 5, 1963, 337-345

TOPIC TAGS: synthetic rubber solubility, synthetic rubber solvent, chloroform rubber solvent, acetone solvent separation, selective precipitation, precipitation control, photocolorimeter

ABSTRACT: The article describes a method for separating individual components in the mixtures of butadiene-styrene rubbers modified by polystyrene. A mixture of methanol with acetone in ratios of 1:3 to 1:9 is suitable for the separation of polystyrene from the rubber; this mixture precipitates polystyrene from a solution in benzene while rubber remains in solution. Pure methanol or pure acetone do not give satisfactory results; neither do mixtures in other

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L 17511-63
ACCESSION NR: AP3001797

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proportions than those stated. Petroleum ether precipitates only polystyrene from benzene solution; precipitation starts when the amount of petroleum ether reaches the amount of benzene present, and is completed at a ratio of benzene 3 to petroleum ether 7. Synthetic rubbers trade name Polysar-Krylen NS and Vestyron N were studied according to the method described; changes occurring as a function of the duration of mixing were noted. Increase of mixing time causes increase in the amount of copolymers. The method was checked for selectivity of precipitation of components by measuring extinction with a photocolorimeter. Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: Katedra organickej technologie Slovenskej Vysokej Skoly Technickej, Bratislava (Chair of Organic Technology of the Slovak Technical University)

SUBMITTED: 05Oct62 DATE ACQ: 25Jun63 ENCL: 00

SUB CODE: CH, IE NO REF SOV: 003 OTHER: 011

Card 2/2

BENISKA, Jozef, doc., inz., Sc.D.; STAUDNER, Emil, inz.; STOKLASA, Karol; MIXSNY, Jaroslav; DOHANICS, Juraj

Caoutchouc modification. Pts. 3-4. Chem zvesti 17 no.5:330-345 '63.

1. Katedra organickej technologie, Slovenska vysoka skola technicka, Kollarovo namestie 2.

FUKA, Jozef, doc. Ing.;FUKA, Gustav, Ing.

Modification of carbohydrates. Pt.5. Chem. zvesti 12 no.2:109-[illegible] '58.

1. Department of Organic Technology, Slovak Higher School of Technology, Bratislava, Kol. nrove namestí 2.

L 45305-66 EWP(j)/T IJP(c) RM

ACC NR: AP6033602 SOURCE CODE: CZ/0043/66/000/001/0018/0027

AUTHOR: Staudner, Emil--Staudner, E. (Engineer; Bratislava); Beniska, Josef--Beniska, Y. (Docent; Engineer; Candidate of sciences; Bratislava); Znamenakova, Gabriela (Engineer; Bratislava)

ORG: Department of Organic Technology, Slovak Technical University, Bratislava (Katedra organickej technologie Slovenskej vysokej skoly technickej)

TITLE: Influence of S compounds on the polymerization of vinyl monomers (I). The influence of tetramethylthiuramdisulfide on the polymerization of styrene

SOURCE: Chemicke zvesti, no. 1, 1966, 18-27

TOPIC TAGS: styrene, polymerization kinetics, monomer, vinyl compound, reaction rate, organic sulfur compound

ABSTRACT: Polymerization kinetics of styrene in the presence of tetramethylthiuramdisulfide (TMTD) in concentration of 2.11×10^{-4} to 0.167 mol/liter were investigated at temperatures of 80, 95, 115, and 130°C. The increase in the rate of polymerization is not a linear function of the amount of TMTD present. Mathematical expressions of this influence are discussed. Orig. art. has: 7 figures, 10 formulas and 1 table. [Based on authors' Eng. abst.] [JPRS: 34,805]

SUB CODE: 07 / SUBM DATE: 23Jul65 / ORIG REF: 002 / SOV REF: 004

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L 45[illegible]-66 EWP(j)/T IJP(c) RM

ACC NR: AP6033602 SOURCE CODE: CZ/0043/66/000/001/0018/0027

AUTHOR: Staudner, Emil--Shtaudner, E. (Engineer; Bratislava); Beniska, Jozef--Beniska, Y. (Docent; Engineer; Candidate of sciences; Bratislava); Znamenakova, Gabriela (Engineer; Bratislava)

ORG: Department of Organic Technology, Slovak Technical University, Bratislava (Katedra organickej technologie Slovenskej vysokej skoly technickej)

TITLE: Influence of S compounds on the polymerization of vinyl monomers (I). The influence of tetramethylthiuramdisulfide on the polymerization of styrene

SOURCE: Chemicke zvesti, no. 1, 1966, 18-27

TOPIC TAGS: styrene, polymerization kinetics, monomer, vinyl compound, reaction rate, organic sulfur compound

ABSTRACT: Polymerization kinetics of styrene in the presence of tetramethylthiuramdisulfide (TMTD) in concentration of 2.11×10^{-4} to 0.167 mol/liter were investigated at temperatures of 80, 95, 115, and 130°C. The increase in the rate of polymerization is not a linear function of the amount of TMTD present. Mathematical expressions of this influence are discussed. Orig. art. has: 7 figures, 10 formulas and 1 table. [Based on authors' Eng. abst.] [JPRS: 34,805]

SUB CODE: 07 / SUBM DATE: 23Jul65 / ORIG REF: 002 / SOV REF: 004

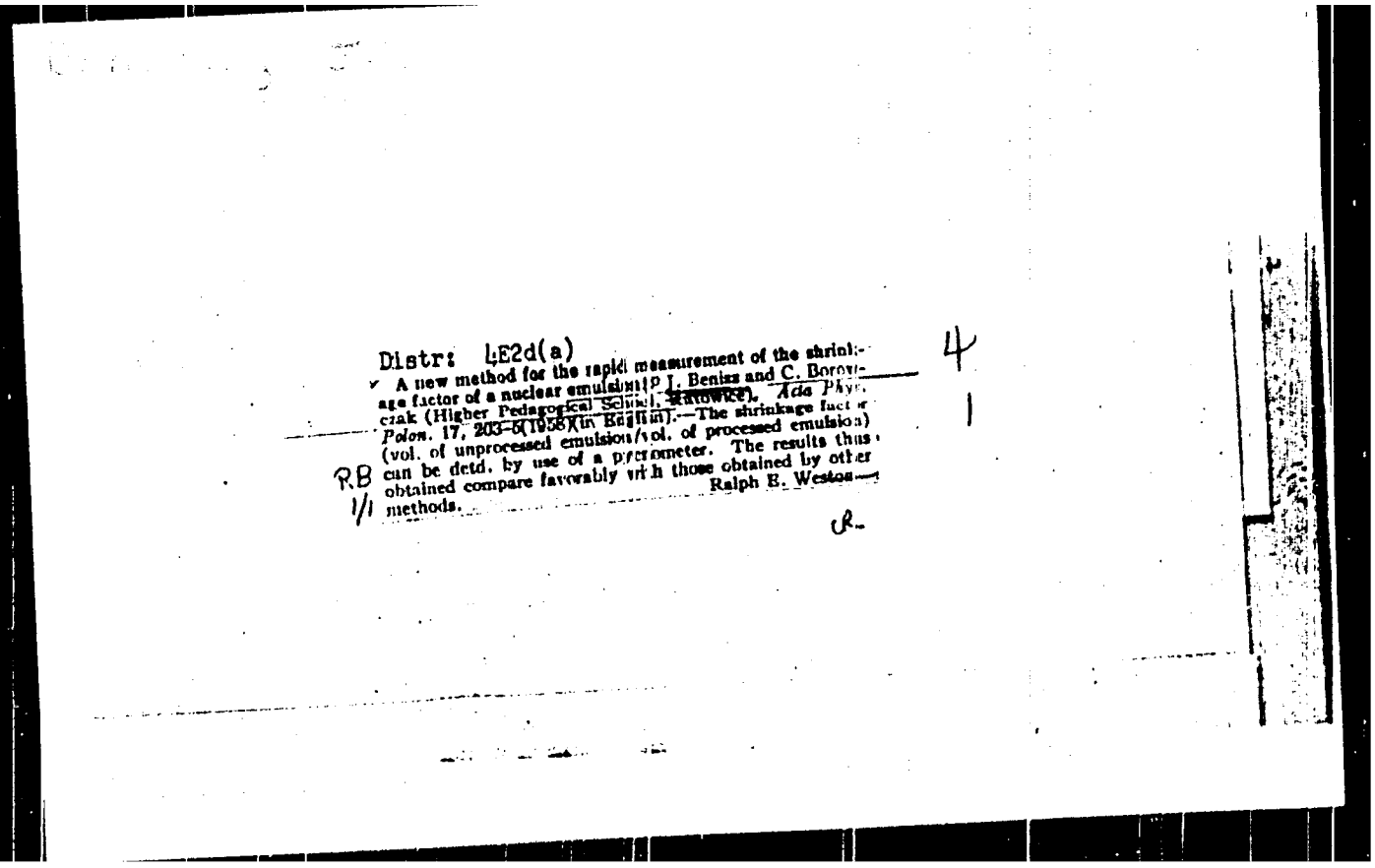
Card 1/1

FATEYEVA, M.N.; PENIZOVSKAYA, A.I.; SOKOLOV, V.V.; GORBARENKO, N.I.; BENISOVA, Ye.A.; OSTAPKOVICH, V.Ye.

Initial reactions of the human organism to the action of ionizing radiations. Med. rad. 5 no.8:3-7 '60. (MIRA 13:12)
(RADIATION—PHYSIOLOGICAL EFFECT)

BENISOVICH, A.B., inzh.

Use of plastic parts in crane construction. Stroi. i dor. mash. 7 no.5:37-38 My '62. (MIRA 15:5)
(Cranes, derricks, etc.--Equipment and supplies)
(Plastics)



Distr: 4E2d(a)

A new method for the rapid measurement of the shrinkage factor of a nuclear emulsion. P. J. Benisz and C. Borowiczak (Higher Pedagogical School, Katowice). *Acta Phys. Polon.* 17, 203–6(1958)(in English).—The shrinkage factor (vol. of unprocessed emulsion/vol. of processed emulsion) can be detd. by use of a pycrometer. The results thus obtained compare favorably with those obtained by other methods. Ralph E. Weston

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1

RB
1/1

BE11I52, 57.

" Investigations of bremsstrahlung of electrons in the energy interval $10^{11}-10^{13}$ e.v. J. Beriez, Z. Chyliński, and W. Wolter (Inst. Nuclear Research, Kraków). *Acta Phys. Polon.* 18, 143-52(1959)(In English).—Four high-energy (≈ 10^{11} e.v.) electron-photon cascades were investigated at the 1st stage of their development. The exptl. energy spectrum of the electron pairs of the 1st generation, produced on the 1st radiation length, shows a statistically significant deviation from the Bethe-Heitler energy-spectrum curve (I). The same was calcd. according to the theories of Landau, Pomeranchuk, and Ter-Mikaelyan (as quoted in Miesowicz, *et al.*, *C.A.* 53, 2815b) (II), which take into account the influence of the medium on the bremsstrahlung of electrons of very high energy. There is good agreement between exptl. results and the curve which represents the energy spectrum of I. This method of investigation of the electron pairs, of the 1st generation only, is a sensitive tool in detecting the difference between the energy spectrum of I and II, since in the cascade development there is a degradation of energy of the emitting electron. Seymour M. Kaye

Card 1/1 aht

23 (3)

AUTHORS: Jeniss, J., Kierzkowski, Z. POL/45-18-5-10/11

TITLE: A New Method of Gamma Background Eradication //

PERIODICAL: Acta Physica Polonica, 1959, Vol 18, Nr 5, pp 527-529 (Poland)

ABSTRACT: This is a letter to the editor. The authors present a new gamma background eradication method, using acetic acid. Nuclear K-2 type plates (produced by "Agfa"), 0.1 mm thick, were impregnated with lithium citrate, neutron irradiated (yielding triton and alpha-tracks) and subsequently treated with a 0.1% acetic acid solution for between 10 and 180 minutes and then developed with amidol. The background was evaluated by means of a Zeiss grid inserted into the eyepiece of the microscope. The result was a decrease in background intensity; the triton- and alpha-tracks remained unchanged. The graph shows the dependence of T_o/T (T_o - number of grains in the background per unit area of a standard plate, T - of an impregnated plate) on impregnation time. Conclusions: a) The gamma background decrease is essentially due to a local effect of tanning. b) The under-development effect is a weaker one. The authors thank L. Jarczyk for valuable remarks, and Doctor K. Grotowski for having neutron-irradiated the plates

Card 1/2

A New Method of Gamma Background Eradication POL/45-13-5-10/11

at the Nuclear Research Institute at Cracow. There are 1 figure and 4 references.

ASSOCIATION: Higher Pedagogical School, Katowice

SUBMITTED: April 29, 1958

Card 2/2

BENISZ, J.; CHODZBA, W.

On the effect of the ageing time of the developer on nuclear emulsion background. Acta physica Pol 20 no.3:269-271 '61.

1. Higher Teacher's College, Katowice.

BENIUSZYS, S.

"New geologic profile of the Pleistocene on the coast of the Gulf of Danzig"

p. 67 (Czasopismo Geograficzne, Vol. 29, No. 1, 1958, Wroclaw, Poland)
(Issued by the Polish Geographical Society; with French summaries-quarterly)

Monthly Index of East European Accessions (EEAI) LC, Vol. 8, No. 1, Jan. 59.

BENIUSZ, Stanislaw, z-ca prof. dr.n.t.

Dynamics of the coast line of the Polish seashore. Archiw hydrotech 7 no.3:315-348 '60.
(EEAI 10:2)

1. Zaklad Geologii Wyzszej Szkoly Pedagogicznej w Gdansku, Gdansk-Wrzeszcz.
(Poland--Coasts) (Poland--Seashore)

BENIUSZYS, Stanislaw, dr n.t.

Outlines of the geological sculpture of the landscape and the development history of the shores of the Gulf of Danzig. Archiw hydrotech 10 no.2:215-260 '63.

1. Zaklad Geologii, Wyzsza Szkola Pedagogiczna, Gdansk.

BENIYEV, Ya.S., dotsent; KAVUNETS, G.P.

Effective treatment with sarcolysine of chorionepithelioma metastases into the lungs. Vrach.delo no.9:122-124 S '62.
(MIRA 15:8)

1. Fakul'tetskaya terapevticheskaya klinika (zav. - deystvitel'nyy chlen AMN SSSR, akademik AN USSR, prof. V.N.Ivanov [deceased]) Kiyevskogo meditsinskogo instituta.
(SARCOLYSINE) (LUNGS--CANCER)

DENIYEVA, I. YA.

USSR

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Mechanism of [illegible] of metals and the protective action of adsorbed layers. I. G. Polotskii and E. Ya. [illegible] ([illegible] Inst. Chem. [illegible], Akad. Nauk Ukr. S.S.R., [illegible]) [illegible] 1, [illegible] (1951).—Erosion by cavitation was studied by using ultrasonic waves produced by a piezo-quartz oscillator. The effect of chem. action on erosion was shown by the following loss in wt. (under the action of ultrasonic waves) in H_2O, ethanol, toluene, and [illegible]: Ni, 0.11, 0.08, 0.0[illegible], —; Cu, 0.24, 0.18, [illegible].13, 0.10; Al, 0.[illegible], [illegible].86, 0.42, 0.17; Mg, 2.70, 0.16, 0.34, 0.18; Pb, 3.70, 0.[illegible], [illegible].62, 0.29; Sn, 0.[illegible]0, 0.20, 0.17, 0.11. Pt and Au tested in H_2O did not lose wt. The effect of an adsorbed layer was shown by tests in sodium oleate solns.; in a 0.2% soln. there was no loss in wt. for any of the metals tested. Passivation by the method of Taubman also prevented wt. loss.

A. C. Guy

BENIYEVA, T. Ya.

KHODOV, Z.L., BENIYEVA, T.Ya.

Determination of the specific electric resistance of the E1262, RFI and St.5 steel varieties in the process of heating and cooling. Trudy Inst.chern.met. vol.8:84-88 '54. (MLRA 7:12)
(Steel alloys--Electric properties) (Electric resistance)

137-58-6-13097

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 273 (USSR)

AUTHOR: Beniyeva, T. Ya.

TITLE: The Dependence of Young's Modulus of Ni-Mo Alloys on Concentration and Temperature (Kontsentratsionnaya i temperaturnaya zavisimost' modulya Yunga nikel'-molibdenovykh splavov)

PERIODICAL: Sb. nauchn. rabot. In-ta metallofiz. AN UkrSSR, 1957, Nr 8, pp 145-152

ABSTRACT: A study of the influence of the composition of an Ni-Mo alloy on Young's modulus of elasticity (E) and on its relationship to temperature. The alloys were smelted in a high-frequency furnace in an Ar atmosphere and later remelted under vacuum. Polished specimens in the shape of metal rods of $d = 700$ mm diam and $\ell = 200$ mm length were prepared for E determination. Using the dynamic method of determination of E made it possible to measure E at temperatures up to $\sim 1200^{\circ}$C. The natural frequency of vibrations f_o of the specimen was determined, and E was calculated by the formula $E = 1.6388 \cdot 10^{-8} (\ell/d)^4 G/\ell f_o^2$ kg/mm^2, where G is the weight of the specimen. When the Mo concentration is increased (>3.13 atom percent) E increases,

Card 1/2

137-58-6-13097

The Dependence of Young's Modulus (cont.)

which indicates a strengthening of interatomic bond. The relationship of E to the temperature of a ferromagnetic alloy with 3.13 atom percent Mo is similar to that of pure Ni, but the minimum of E is displaced to the vicinity of 100° C. The magnetic alloys examined, containing 6.27 - 12.89 ~~percent~~ atom percent Mo, have a higher value of E, which up to 700° varies almost linearly and then decreases more rapidly. The temperature coefficient of E in the interval of 100 - 700° decreases with an increase in Mo concentration, but from 800 to 1100° it increases, which indicates a considerable weakening at 800 - 1100°. Bibliography: 17 references.

S.S.

1. Molybdenum-nickel alloys--Elasticity 2. Molybdenum-nickel alloys--Properties
3. Elasticity--Temperature factors

Card 2/2

SOV-137-58-8-17913

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 246 (USSR)

AUTHORS: Polotskiy, I G , Beniyeva, T Ya

TITLE: The Influence of Audio and Ultrasonic Frequency Vibrations on the Process of Crystallization in Metals (Vliyaniye kolebaniy zvukovoy i ul'trazvukovoy chastoty na protsess kristallizatsii metallov)

PERIODICAL: Sb nauchn. rabot In-ta metallofiz AN UkrSSR, 1957, Nr 8, pp 163-169

ABSTRACT: It is demonstrated that audio frequency vibrations eliminate the tendency for the formation of columnar crystals in the course of crystallization, and facilitate the attainment of a fine crystalline structure. It is assumed that high frequency ultrasonic vibrations influence the size of grains more effectively than low frequency oscillations. The effect of ultrasonic frequencies on the process of crystallization in a melt is examined briefly, including the formation of excess pressures and tensile stresses, dispersion of growing crystals and particles of impurities, appearance of additional crystallization nuclei, and the effect of transverse vibrations of the walls of the molds. Bibliography: 26 references. 1. Metals--Crystallization 2. Metals--G M Crystal structure 3. Vibration--Metallurgical effects

Card 1/1

POLOTSKIY, I.G.; BENIYEVA, T.Ya.; KHODOV, Z.L.

Effect of alloy elements on the temperature relation of elasticity modulus in nickel and nichrome alloys. Issl. po zharopr. splav. 3:310-324 '58. (MIRA 11:11)
(Nickel alloys--Testing) (Elasticity)
(Metals, Effect of temperature on)

BENIYEVA, I. YA.

18(4,7); 25(1) PHASE I BOOK EXPLOITATION SOV/2306

Akademiya nauk Ukrainskoy SSR. Institut metallofiziki

Voprosy fiziki metallov i metallovedeniya (Problems in the Physics of Metals and Metallography) Kiyev, Izd-vo AN Ukrainskiy SSR, 1959. (Series: Its: Sbornik nauchnykh rabot, Nr 9) Errata slip inserted. 3,000 copies printed.

Ed. of Publishing House: V.L. Shkurko; Tech. Ed.: M.I. Yefimova; Editorial Board: V.N. Svechnikov, Academician, Academy of Sciences, Ukrainian SSR (Resp. Ed.); S.D. Gertsriken, Doctor of Physical and Mathematical Sciences; and I.Ya. Dekhtyar, Doctor of Technical Sciences.

PURPOSE: This collection of articles is intended for scientific workers, aspirants, and engineers in the fields of the physics of metals, metallography, and metallurgy. It may also be useful to students of advanced courses in metallurgical and physical faculties.

COVERAGE: This collection of articles deals with the following topics: effect of high-speed heating, heat treatment, deformations, and crystallization conditions on phase transformations, structures, and properties of metals and alloys; the effect of additional alloying components on volumetric and intercrystalline diffusion in alloys; and the effect of repeated quench hardening and radioactive and ultrasonic treatment on the physical properties of alloys. No personalities are mentioned. References follow several of the articles.

Dekhtyar, I.Ya., S.D. Gertsriken, A.N. Shalayev, and N.P. Plotnikova. Effect of Irradiation on Some Physical Properties of the Ni_3Mn Alloy 173
The article discusses the influence of γ-irradiation on longitudinal galvanometric effect; on the lattice parameter of the Ni_3Mn Alloy (electrolytic Ni and 23 percent electrolytic Mn); and on the process of thermal ordering.

Polotskiy, I.G., and T.Ya. Beniyeva. Effect of Alloying and Heat Treatment on the Elastic Properties of Nickel Alloys 178
The results of experimental investigation of the dependence of the modulus of elasticity on the composition and temperature of Ni-Cr and Ni-Ti alloys are presented. The effect of heat treatment on elastic properties of these alloys is discussed.

Ovsiyenko, D.Ye., and Ye.I. Sosnina. Influence of Crystallization Conditions on the Mosaic Structure of Aluminum Crystals 185
The article reviews work done previously on investigations of the mosaic structure of cast aluminum (99.996 percent Al) crystals. The investigation takes the conditions of grain growth and eventual admixtures into consideration.

Lashko, A.S., and D.N. Dashkov. Calculation of the Function of Distribution of Atoms in a Fluid 198
The complete sequence of the trigonometric method for calculating the function of distribution of atoms is presented. The intensity curve of dispersed X-rays of liquid mercury is used as an example.

AVAILABLE: Library of Congress

Card 12/12 GO/ajr
10-12-59

BENIYEVA, T.YA.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev, Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

Studies (Cont.) SOV/3355

Card 7/12

POLOTSKIY, I.G.; BENIYEVA, T.Ya.

Effect of alloying and heat treating on the elastic properties of nickel alloys. Shor. nauch. rab. Inst. metallofiz. AN URSR no.9:178-184 '59. (MIRA 12:9)
(Nickel alloys--Heat treatment)
(Elasticity)

BENIYEVA, T. YA, Cand Tech Sci -- (diss) "The effect of the composition, temperature and thermal treatment on the elastic properties of nickel-based alloys," Kiev, 1960, 18 pp, 170 cop. (Institute of Metallurgy im A. A. Baykov, AS USSR) (KL, 45-60, 125)

BENIYEVA, T.Ya.

Effect of composition on the elastic properties of binary nickel alloys. Ukr. fiz. zhur. 5 no.2:223-230 Mr-Ap '60. (MIRA 13:12)

1. Institut metallofiziki AN USSR.
(Nickel alloys) (Elasticity)

S/180/61/000/002/008/012
E071/E435

18 8100 1413, 1418, 1138

AUTHORS: Polotskiy, I.G., Beniyeva, T.Ya., Khodov, Z.L. and Il'chenko, V.I. (Kiyev)

TITLE: The Influence of Alloying on Some Physical Characteristics of Chromium and Nickel-Chromium Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.2, pp.108-114

TEXT: The relations govering changes in the elastic properties of alloys were studied in order to investigate the influence of some factors on the strength of interatomic bonds. The influence of the composition, temperature and plastic deformation on the elastic properties of solid solutions of transition elements was investigated. In addition, non-elastic properties for nickel-based alloys were also studied. The influence of tungsten and iron on the elastic properties of chromium, as well as of tungsten and molybdenum on the elastic and non-elastic properties of nichrome, and the influence of plastic deformation on the elastic properties of nichrome were investigated. Determination of the elastic

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E071/E435

The Influence of ...

properties of chromium and its alloys was carried out on ultrasonic impulse apparatus described by I.G.Polotskiy and T.Ye.Stefanovich (Ref.1) and the Young modulus and the damping decrement at elevated temperatures on an apparatus described by I.G.Polotskiy and V.F.Taborov (Ref.2). Chromium-based alloys, containing up to 13.05% of tungsten and up to 3.11% of iron, were used for the investigations. Chromium and its alloys were prepared from electrolytic chromium by smelting and casting in a high vacuo. The cast chromium was about 99.9% purity. Experimental chromium-tungsten alloys were smelted in a high-frequency furnace in an argon atmosphere. Nickel-based alloys Ni-Al, Ni-Cr-Mo, Ni-Cr-W were smelted in a high-frequency furnace in a vacuo. The purity of the starting materials was as follows: Cr - 99.9%, Ni - 99.99%, W - 99.95% and Mo- 99.9%. The chemical composition of the alloys investigated is given in wt.% in the table (OCT - rest). The Young modulus and the damping decrement were measured on polished specimens in the form of rods 7 mm in diameter and 200 mm long. During heat treatment the specimens were sealed in a quartz tube from which air had been evacuated (10^{-4} mm Hg). Chromium and Cr-Fe, Cr-W alloys were

The Influence of ...

heated to 1100°C and retained at this temperature for 3 hours. Determination of the temperature dependence of the Young modulus was carried out in vacuo. In order to preserve approximately the same grain size of nickel alloys, the following heat treatment was used: nichrome alloys with various additions of tungsten in the form of 12 mm semis were heated to 900°C for 4 hours and, after producing the specimen, at 900°C for 1 hour; nichrome alloys with molybdenum additions in the form of 12 mm semis were annealed at 900°C for 2 hours and the specimens made from these were annealed at 900°C for 1 hour. After polishing, the specimens were annealed at 800°C in vacuo for 20 minutes. Cooling after annealing was done with the furnace. Determination of the velocity of propagation of longitudinal and transverse sonic waves in chromium (99.9%) enabled calculating the Young modulus, the shear modulus, Poisson's coefficient and the modulus compression from all sides for specimens of electrolytic chromium ($E = 27540$ kg/mm^2, $G = 11150$ kg/mm^2, $\mu = 0.24$ and $K = 17100$ kg/mm^2). The experimental results are given in graphs as follows: concentration and temperature dependence of the elastic modulus for chromium

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The Influence of ...

alloys (Fig.1); temperature dependence of the Young modulus for Ni-Al alloys (Fig.2); temperature dependence of the Young modulus (continuous lines) and the damping decrement (broken lines) for nichrome with various additions of tungsten (a) and molybdenum (b) (Fig.3). Since changes in the elastic properties of metals and alloys after cold plastic deformation have been little studied, the authors investigated this influence on Ni-Cr alloys (Ni + 10.48 at.% Cr, Ni + 23.46 at.% Cr and Ni + 28.13 at.% Cr). In order to establish general relationships, copper of 99.9% purity was studied first. Determination of the elastic characteristic was done on the basis of changes in the velocity of propagation of longitudinal and transverse sound waves in the initial and deformed states in the direction of deforming stresses and perpendicular to this direction. The accuracy of the measurements was about 0.1%. All specimens were investigated in the annealed state. Ni-Cr alloys were deformed in a 60 ton press by uniaxial compression. The degree of deformation varied from 0 to 60%. The experimental results for copper are shown in Fig.4. The magnitude of the elasticity modulus of copper changes depending on the direction and

The Influence of ...

degree of plastic deformation. In the direction of applied stresses for up to 9% of plastic deformation the Young modulus decreases, then remains constant to up to about 12% and with further increase of plastic deformation it decreases linearly. The elasticity modulus in the direction perpendicular to the direction of applied stresses decreases more sharply up to about 9% of the plastic deformation, then remains practically unchanged up to 20% of deformation and reaches a constant value on increasing the degree of deformation to 57%. At a deformation above 10% the difference in the value of the elasticity modulus in two perpendicular directions is probably related to a steady formation of the texture which is characteristic for this form of deformation. The influence of a low temperature annealing (100, 200, 300, 400 and 500°C) on the elastic properties of copper submitted to plastic deformation of 25 to 57% was also studied. The results (Fig.5) indicate that the temperature of the beginning of recrystallization is lower at higher degrees of deformation, e.g. for a 57% deformed copper specimen an increase in the elasticity modulus was observed already at 200°C while for less deformed specimens no change in the Young modulus was observed at

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this temperature. The value of the Young modulus of nickel alloys (Fig.6) also changes depending on the direction of applied stresses and the degree of deformation, whereupon a larger decrease of elastic properties was observed for alloys than for copper. It is pointed out that in nickel alloys, the influence of plastic deformation on the decrease of the modulus of elasticity increases with increasing concentration of chromium. The latter is possibly caused by the fact that in Ni-Cr alloys in addition to the formation of texture a decrease of elasticity takes place due to the destruction of the K-state, formed during the thermal treatment of alloys. The following conclusions are arrived at. 1) An increase in the elasticity moduli on additions of tungsten to chromium and a decrease in the Young modulus for Cr-Fe alloys within a wide range of temperatures indicates that tungsten in binary Cr-W alloys slightly strengthens interatomic bonds, while an addition of iron to chromium leads to weakening of the latter. 2) The temperature dependence of the Young modulus for nickel alloys containing 1.1 to 5.0 at.% of aluminium in the ferromagnetic temperature range is of the same character as for pure nickel but with increasing concentration of

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E071/E435

The Influence of ...

aluminium the curves of the temperature dependence begin to flatten out. Additions of aluminium have a slowing effect on the decrease in the Young modulus at elevated temperatures (500 to 800°C) and thus aluminium counteracts the weakening of Ni-Al alloys. 3) With increasing concentration of tungsten in nichrome (from 0.60 to 2.86 at.% W) the absolute value of the Young modulus for Ni-Cr-W alloys increases and its higher value is retained for alloys with a higher concentration of tungsten in the whole temperature range investigated (20 to 700°C). With increasing concentration of molybdenum from 0.97 to 6.44 at.%, the elasticity modulus for Ni-Cr-Mo alloys changes little. Therefore, the above alloys can be classified into a single group, as their Young moduli are basically determined by the elasticity moduli of nichrome. 4) The curves of the temperature dependence of the damping decrement for nichrome with various concentrations of tungsten and molybdenum have the same character but for alloys with a lower concentration of the above elements a sharp increase in the damping decrement was observed at lower temperatures. The latter is apparently caused by elastic imperfections and in the first instance by viscous slipping along the grain boundaries. [redacted]

Card 7/14

7

25574
S/185/60/005/002/009/022
D274/D304

18.1250 1416, 2808, 1208

AUTHOR: Beniyeva, T. Ya.

TITLE: Influence of the composition of binary nickel alloys on their elastic properties

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 5, no. 2, 1960, 223-229

TEXT: The influence of composition and temperature on the elastic properties of the systems Ni-Cr, Ni-Mo, Ni-Ti and Ni-Al are investigated; the coefficients of thermal expansion are determined. The alloys were melted in a furnace in an argon atmosphere. In order to eliminate the influence of ferromagnetism on the elasticity modulus in ferromagnetic alloys, the dependence of elasticity modulus on concentration was determined in the binary nickel alloys above the Curie point, at 600°C. Chromium and molybdenum content of the nickel alloys increases the elasticity modulus; for Ni-Mo the dependence between concentration and elasticity modulus is linear. For Ni-Ti, with Ti content of between 5.24 and 10.06 atomic %, the elas-

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Influence of the composition...

ticity modulus remains practically unchanged; with Ti content of 12.5 atomic %, the elasticity modulus decreases slightly. This difference in behavior of the Cr- and Mo- alloys on the one hand, and of the Ti-alloys on the other is due to the unfavorable ratio of atomic diameters of Ni and Ti. In the case of Al-alloys, the elasticity modulus increases for a content of 1.1 atomic % Al, but then it remains practically unchanged up to a concentration of 5.0 atomic % Al. The results obtained by the author for Ni-Ti alloys are in agreement with the theoretical results obtained by C. Zener (Ref. 5: Acta. Crystall., 2, 163, 1949). A comparison of elastic constants of Ni-alloys and other interatomic bonding characteristics, shows that the activation energy of diffusion is more susceptible to changes in composition of the alloys than the elasticity moduli. It is noted, however, that although the activation energy of diffusion changes sharply in N-Cr and Ni-Mo alloys, the diffusion coefficient changes but little. The Debye temperature was determined from the elastic constants of the alloys. The data obtained show that the Debye temperature varies unequally for Ni-Cr, Ni-Ti and Ni-Al alloys.

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Influence of the composition...

The temperature data obtained by the author disagree considerably from those obtained by G.V. Kudryumov and N.T. Travina by means of X-ray studies (Ref. 11: Problemy metallovedeniya i fiziki metallov, sb. trudov, Metallurgizdat, 4, 402, 1955). It is noted that temperature data obtained from elastic constants are more reliable than those obtained by X-ray investigations. It was found that the ratio of thermal-expansion coefficient to the elasticity-modulus temperature-coefficient is constant $\sim 40 \cdot 10^{-3}$, over a wide temperature range; but it is not constant at temperatures which involve the appearance of viscous slips along grain boundaries. As a consequence of this constant ratio, the thermal expansion coefficient can be used in practice for the determination of the temperature coefficient of the elasticity modulus, within a certain temperature range; this method is however indirect, and can be used as an estimate only. It is concluded that the elasticity modulus increases in the case of Ni-Cr and Ni-Mo, but remains practically unchanged for Ni-Ti and Ni-Al. The Debye temperature varies but slightly. There are 5 figures, 4 tables and 14 references: 12 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as

Card 3/4

Influence of the composition...

follows: C. Zener, Acta Crystall., 2, 163, 1949; A. Smith, J. Inst. of Metals, 80, 477, 1952.

ASSOCIATION: Instytut metalofizyky AN USSR (Institute of Metal-physics AS UkrSSR)

SUBMITTED: July 4, 1959

Card 4/4

S/126/61/012/004/012/021
E193/E383

AUTHORS: Beniyeva, T.Ye. and Polotskiy, I.G.

TITLE: The effect of some factors on the elastic properties of nickel- and nichrome-base alloys

PERIODICAL: Fizika metallov i metallovedeniye, v.12, no. 4, 1961, 584 - 594

TEXT: In view of the scarcity of data on the elastic properties of nickel alloys the present authors studied (by the dynamic method) the variation of the Young modulus, E, of alloys of Ni-rich and of Ni-Cr, Ni-Mo, Ni-Al, Ni-Ti, Ni-Cr-Al, Ni-Cr-Ti and Ni-Cr-Ti-Al-W systems as a function of composition, temperature and preliminary heat treatment. All the results are reproduced graphically. The temperature-dependence of some Ni-base alloys is illustrated in Fig. 3 where E x 10^{-3} kg/mm^2 is plotted against temperature (^{o}C) the various curves relating to 1 - Ni; 2 - Ni + 10.48% Cr; 3 - Ni + 23.46% Cr; 4 - Ni + 5.24% Ti; 5 - Ni + 10.06% Ti; 6 - Ni + 12.51% Ti (at.%). In Fig. 7 the ratio of thermal expansion coefficient,

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α to the temperature coefficient of the Young modulus, η, ($\alpha/\eta \times 10^3$) is plotted against the temperature for the following alloys: Curve 1 - Ni + 5.24 at.% Ti and Curve 2 - Ni + 10.06 at.% Ti. Finally the effect of ageing of two alloys quenched from 900 °C on E is illustrated in Fig. 11, where the ratio of E of aged specimens to E of quenched material (E_{otozh}/E_{zak} %) is plotted against the ageing temperature (°C). Curves 1 and 2 relating to Ni - 17.8 Cr - 3.42 Ti - 0.71 Al and Ni - 20.54 Cr - 2.32 Ti - 0.88Al - 4.16 at.% W alloys respectively. Several conclusions were reached:

1) The elastic modulus of Ni is slightly increased by Cr, Mo or Al additions and is practically unaffected by additions of up to 10 at.% Ti.

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The effect of some factors ...

2) The Debye temperature calculated from the elastic constants is slightly increased by the addition of Cr and is hardly affected by Al and Ti additions. It can be inferred therefrom that the characteristics of atomic interaction in Ni are not affected by Cr, Al or Ti additions.
3) In the case of non-ferromagnetic Ni-Cr and Ni-Mo alloys, the relatively higher value of E is maintained in alloys with high Cr or Mo concentrations within the entire temperature range investigated. Cr Mo or Al additions decrease the rate of diminishing of E with rising temperature.
4) Since the α/η ratio of Ni-Mo and Ni-Ti alloys remains practically constant (at approximately 40×10^{-3}) at temperatures up to 0.52 - 0.55 of the melting point expressed in °K, the approximate value of the temperature coefficient of E can be calculated from the coefficient of thermal expansion.
5) Low-temperature treatment of the alloys studied brings about a small increase in the elastic modulus. This effect, which is associated with the formation of the K-state, is destroyed on increasing the temperature.

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E193/E383

The effect of some factors

There are 11 figures, 2 tables and 32 references: 26 Soviet-bloc and 6 non Soviet-bloc. The three English-language references mentioned are: Ref. 3 - C. Zener - Acta Crystal. 1949, 2, 163. Ref. 18 - J. Friedel, C. Boulanger, C. Crussard - Acta mat., 1955, 3, 380. Ref. 27 - A.K. Taylor, K.G. Hinton - J. Inst. Metals, 1952, 81, 169.

ASSOCIATION: Institut metallofiziki AN UkrSSR
(Institute of Physics of Metals AS UkrSSR)

SUBMITTED: February 20, 1961

Card 4/6

S/601/62/000/016/028/029
E192/E382

AUTHORS: Beniyeva, T.Ya. and Yanchuk, N.M.

TITLE: Equipment for measurement of the attenuation of ultrasonic waves in metals and investigation of the influence of grain size on the attenuation

SOURCE: Akademiya nauk Ukrayins'koyi RSR. Instytut metalofyzyky. Sbornik nauchnykh rabot. no. 16. Kiev, 1962. Voprosy fiziki metallov i metallovedeniya. 205 - 212

TEXT: Results of measurements of the frequency-dependence of the attenuation of ultrasonic waves in titanium, chromium, nickel, aluminum, iron and copper are reported. Pulsed ultrasonic equipment operating with fixed frequencies of 5, 9, 15, 21 and 25 Mc/s was designed for this purpose. The transducers were in the form of half-wave, X-cut quartz units for frequencies of 3 and 5 Mc/s, which were excited either at the fundamental or odd harmonics. The attenuation of an elastic wave of small amplitude is exponential but when measuring the attenuation by the pulse method the exponential law can be distorted due to the lack of

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Equipment for ....

perfect parallelism between the operating surfaces of the sample. A circuit producing a high-frequency exponentially decaying signal was therefore included in the equipment and the signal was superimposed on the reflected pulses. This signal was used to check the exponential character of the reflected pulses and for determining the attenuation. The experiments show that the attenuation in aluminium increases approximately linearly with frequency. The samples with larger grains show a comparatively low attenuation over the whole investigated frequency range. As regards the attenuation of ultrasonic waves in titanium and chromium, a linear increase in attenuation is observed for frequencies up to 15 Mc/s; above this frequency, the attenuation rapidly increases. Secondly, over the whole frequency range the attenuation in chromium is only slightly higher than that in titanium. In iron, copper and nickel the attenuation increases with frequency and grain size. Measurement of the attenuation in iron, copper and nickel was carried out at wavelengths which were much longer than $\bar{D}$ (average grain size). In this case, the scattering of the

S/601/62/000/016/028/029
E192/E382

Equipment for ....

ultrasonic waves was largely dependent on [illegible] and frequency.
There are 5 figures.

SUBMITTED: January 24, 1962

Card 3/3

GERTSRIKEN, S.D. [deceased]; POLOTSKIY, I.G.; BENIYEVA, T.Ya.; YATSENKO, T.K.

Effect of ultrasonic waves on the self-diffusion of cesium. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.17:83-88 '63. (MIRA 17:3)

L 4880-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACCESSION NR: AP5019834 UR/0181/65/007/008/2273/2275

AUTHORS: Beniyeva, T. Ya.; Larikov, L. N.; Polotskiy, I. G

TITLE: Effect of structure on Young's modulus and the damping decrement of aluminum

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2273-2275

TOPIC TAGS: aluminum, single crystal, Young modulus, crystal lattice structure, temperature dependence, vibration damping

ABSTRACT: The authors investigated the influence of crystal structure imperfections on the Young's modulus and damping decrement of cylindrical single crystals of 99.99 per cent pure aluminum, 100 mm long and 5 mm in diameter, grown by the Bridgman method. The temperature dependence of these parameters in different structural states was measured by a resonance method (L. G. Polotskiy and V. F. Taborov, Zav. lab. v. 8, 986, 1957) in the same sample. The results show that even in well annealed single crystals of aluminum Young's modulus is not a linear function of the temperature and that as the temperature

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ACCESSION NR: AP5019834

is increased it depends essentially on the structure of the sample, so that it cannot be used as an unambiguous characteristic of the interatomic binding forces at temperatures exceeding half the melting temperature. At relatively low temperatures, the damping decrement depends little on the perfection of the sample structure and on the amplitude of the strain. With increasing temperature, the decrement begins to depend strongly on the amplitude and the amplitude-independent part of the damping decrement begins to depend on the structure. Orig. art. has: 2 figures.

ASSOCIATION: Institut metallofiziki AN SSSR; Kiev (Institute of Metal Physics, AN SSSR)

SUBMITTED: 21Jul64 ENCL: 00 SUB CODE: SS, MM

NR REF SOV: 001 OTHER: 008

Card 2/2

BENJA, Andrej [translator]

Use of overheated steam in heat treatment. Pogon 3 no.3/4:55 Mr-Ap '62.

BENJA, Andrej [translator]

Screws conserving great hardness at high temperatures. Pogon 3 no.3/4:56-57 My-Ap '62.

BENJA, Andrej [translator]

Elastic grindstones. Pogon 3 no.3/4:57 Mr-Ap '62.

BENJAMIN, Karoly

Some school constructions of the Budapest Capital Council. Magy ep ipar 10 no.7:264-269 '61.

BENKE, BOHUSLAV

CZECHOSLOVAKIA/Cultivated Plants. Fruits. Berries.

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34613

Author : Benko Bohuslav
Inst : Czechoslovak Academy of Agr.
Title : The Nutrition of Stone Fruit Species in Regard to Slovakian Environments

Orig Pub : Sborn. Czechosl. akad. zemed. ved. Rostl. vyroba, 1956, 29, No 5, 433-440

Abstract: Attention paid to the feeding problems of fruit trees is very inadequate. Before fertilizing a garden, it is indispensable to proceed with a analysis of the soil with respect not only to its content in nutritive matters but also to that of micronutrients. -- Rivkind

Card : 1/1

Country : CZECHOSLOVAKIA
Category: Soil Science. Mineral Fertilizers

Abs Jour: RZhBiol., No 14, 1958, No 63098

Author : Benke, B
Inst : -
Title : Chlorosis Due to Iron or Nitrogen Deficiency

Orig Pub: Ovosnar., a zelinar. 1957, 5, No 8, 233

Abstract: Chlorosis of leaves may be caused by deficiency of many elements and also by bad soil conditions. The doses of various fertilizers and methods of applying them are presented -- Z. Zhurbitskiy

Card : 1/1

CA

Formation of 2-phenyl-4-benzylidene-5-4*H*-oxazolone from phenylserine ethyl ester during the Schotten-Baumann acylation. James Wem and Gedeon Barke (Univ. Szeged, Hung.). *Magyar Kém. Folyóirat* **57**, [illegible]. Phenylserine Et ester in abs. EtOH was hydrogenated [illegible] hrs. under 120 atm. pressure at 50° in the presence of W-6 Raney Ni catalyst with a good shaking. Seven grams of product could be obtained from the thick brown oil obtained. When this oil was benzoylated at 0° by the Schotten-Baumann reaction with BzCl in an alk. medium with stirring, a yellow cryst. substance was obtained which proved to be 2-phenyl-4-benzylidene-5-4*H*-oxazolone (I), m. 170°. Obviously the unchanged amino ester underwent a double condensation. The reaction is explained by the stability of the oxazolone deriv. formed primarily and the removal of the OH group to the α-position forming a system with conjugated bonds and increasing the stability. The fact that I was formed in place of PhCH(OH)CH(NH$_2$)-CH$_2$OH is probably a result of the high thermolabile stability of 4-benzylidene-5-4*H*-oxazolone deriv. [illegible]

PEIKE, I.

Establishment of permanent unit prices in the industries of civil engineering. p. 491.

Vol. 4, no. 9, Sept. 1954.
[illegible]
Budapest

SOURCE: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 3, March, 1956.

BENKE, L.

"Methods of Organizing Production Lines With Several Sections and Models." p. 380
(Magyar Textiltechnika. No. 11/12, Nov./Dec, 1953 Budapest.)

Vol. 3, no. 6
SO: Monthly List of East European Accessions,/Library of Congress, June 1954,Uncl.

HUNGARY

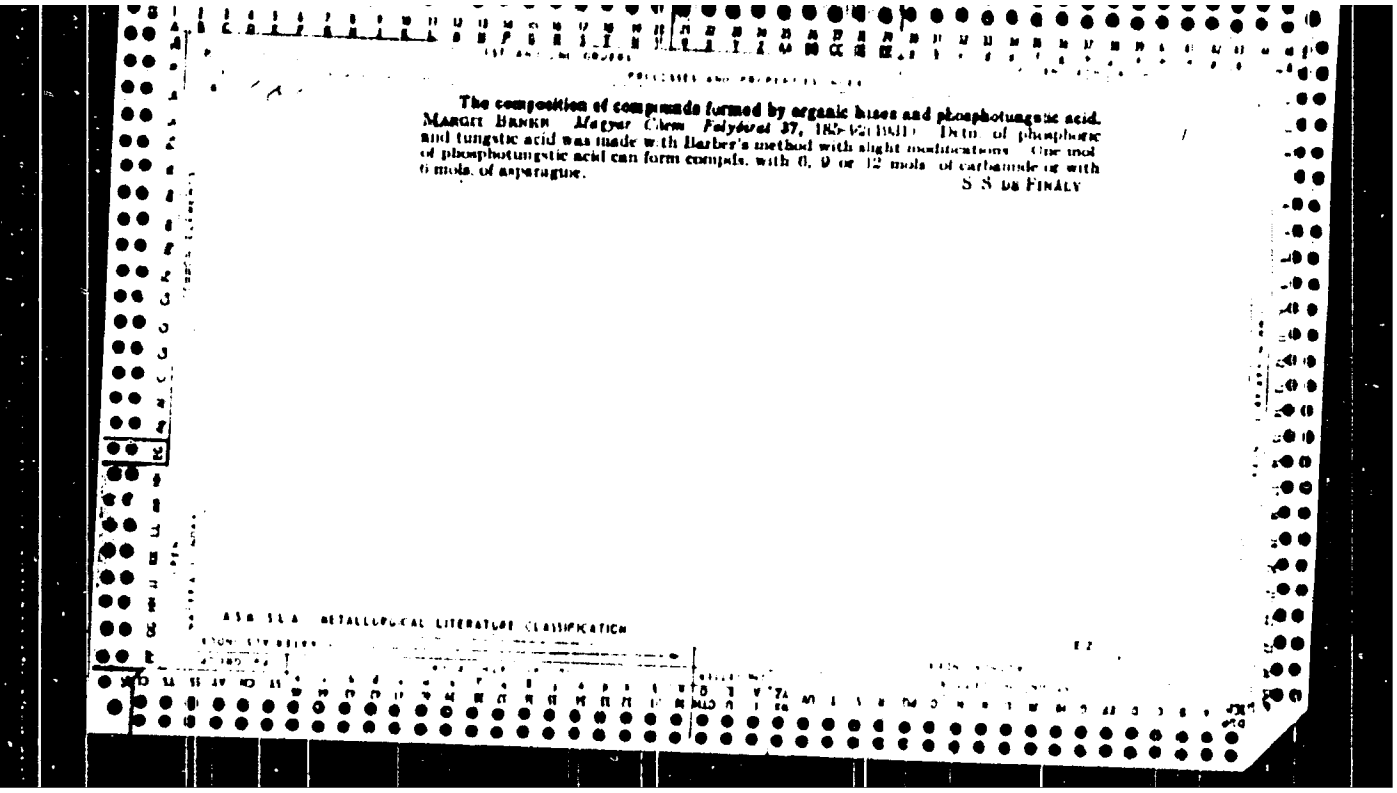
BENKE, Laszlo, HAMORI, Jozsef; Medical University of Budapest, Neurological Clinic and Institute of Anatomy (Budapesti Orvostudomanyi Egyetem, Neurologiai Klinika es Anatomiai Intezet).

"Electronmicroscopic Study of Cerebellar Cortical Atrophy."

Budapest, A Magyar Tudomanyos Akademia V. Orvosi Tudomanyok Osztalyanak Kozlemenyei, Vol XVI, No 4, 1965, pages 359-363.

Abstract:[Authors' Hungarian summary] A biopsy sample taken from the cerebellum of a patient with cerebellar syndrome was examined by electronmicroscopy; special attention was given to the stratum moleculare. In the absence of literature data, the submicroscopic structure of the stratum moleculare of a normal human cerebral cortex was also examined for comparison. The submicroscopic differences between the normal sample and that of the abnormal one are described; on light microscopy, the latter showed evidence of the disappearance of isolated Purkinje cells. The changes, in essence, consisted of the disappearance of Purkinje cells, their dendrites and spike synapses, their place taken by an increased glial matter. 2 Hungarian, 6 Western references. [Manuscript received 12 May 65.]

1/1



The composition of compounds formed by organic bases and phosphotungstic acid. MARGIT BANKÓ *Magyar Chem. Folyóirat* 37, 185-92(1931). Deta. of phosphoric and tungstic acid was made with Barber's method with slight modifications. One mol. of phosphotungstic acid can form compds. with 6, 9 or 12 mols. of carbamide or with 6 mols. of asparagine.

S. S. DE FINALY

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

VARGA, M.; BENKE, S.; HETENYI, G.

Effect of leucotomy on gastric juice secretion. Acta med. hung. 2 no.2:229-242 1951. (CLML 21:2)

1. Of the Therapeutic Clinic (Director--Geza Hetenyi, M.D.) and of the Neuro-Pathological Clinic (Director--Isztwan Gusak, M.D.) Szeged.

AID P - 3644

Subject : USSR/Medicine

Card 1/1 Pub. 37 - 8/18

Author : Benke, Tibor

Title : Sketch of the activities of the Hungarian Institute of Industrial Hygiene.

Periodical : Gig. i. san., 10, 37-39, O 1955

Abstract : Describes the scientific investigations and practical achievements of the Institute, since its foundation five years ago, in the field of prevention of occupational diseases, as well as in the improvement of the health of workers.

Institution: None

Submitted : Je 28, 1955

BENKEN, A.A.

Pathogenesis of verticillium wilt in cotton. Bot. zhur. 50 no.3: 430-434 Mr '65. (MIRA 18:5)

1. Vsesoyuznyy institut zashchity rasteniy, Leningrad.

BENKEN, A.A., mladshiy nauchnyy sotrudnik

Diagnosis of verticillium wilt of cotton. Zashch. rast. ot vred. i bol. 8 no.3:44-45 Mr '63. (MIRA 17:1)

1. Laboratoriya mikologii Vsesoyuznogo instituta zashchity rasteniy.

PENKEN, A.A.; LAVROVA, L.N.; USPENSKAYA, G.D.

Development of Verticillium dahliae Kleb. as related to the conditions of nutrition. Nauch.dokl.vys.shkoly; biol.nauki no.3:118-124 '58. (MIRA 11:8)

1. Rekomendovana kafedroy nizshikh rasteniy Moskovskogo gosudarstvennogo ordena Lenina i ordena Trudovogo Krasnogo Znameni pedagogicheskogo instituta imeni V.I. Lenina i Laboratoriyey mikologii Vsesoyuznogo nauchno-issledovatel'skogo instituta zashchity rasteniy.

BENKER, L. G.

USSR/ Miscellaneous - Conservation of materials

Card 1/1 Pub. 128 - 19/26

Authors : Benker, L. G.

Title : An experiment on economizing materials

Periodical : Vest. mash. 2, 96-98, Feb 1954

Abstract : The editorial reports on tests, conducted by the Textile Machine Construction Plant in Tashkent, on economizing materials by decreasing the weight and dimensions of spinning looms. Some experience related to

of the type F-66-1, and F-1 1-166 rooms, are presented. Drawings.

Institution : .....

Submitted : .....

BENKEVICH, V.I.

Distribution of gypsy moth (Porthetria dospar L.) ovipositors in the Gornyy Altai [with English summary in insert]. Zool.zhur.35 no.7: 1013-1016 Jl '56. (MLRA 9:9)

1.Orekhovo-Zuyevskiy pedagogicheskiy institut.
(Altai Mountains--Gypsy moth)

BENKEVICH, V.I.

Different tree species and their age groups as a substratum for gypsy moth eggs. Nauch.dokl.vys.shkoly;biol.nauki no.4: 26-30 '58. (MIRA 11:12)

1. Rekomendovana kafedroy zoologii Orekhovo-Zuyevskogo pedagogicheskogo instituta.
(Gypsy moth) (Trees--Diseases and pests)

BENKEVICH, V.I.

Use of ultraviolet rays in the control of gypsy moth (Porthetria dispar L.). Nauch.dokl.vys.shkoly; biol.nauki no.3:39-42 '59. (MIRA 12:10)

1. Rekomendovana kafedroy zoologii Orekhovo-Zuyevskogo pedagogicheskogo instituta.
(Gypsy moth) (Ultraviolet rays)

BENKEVICH, V.I.

Forecasting mass outbreaks of the lackey moth (Malacosoma neustria L.) in Moscow Province. Nauch.dokl.vys.shkoly; biol.nauki no.2:15-19 '60. (MIRA 13:4)

1. Rekomendovana kafedroy zoologii Orekhovo-Zuyevskogo pedagogicheskogo instituta.
(MOSCOW PROVINCE--MOTHS) (FOREST INSECTS)

BENKEVICH, V.I.

Forecasting mass outbreaks of the nun moth Ocneria monacha L. (Lepidoptera, Liparidae) in Moscow Province. Ent. obozr. 39 no.4:749-760 '60. (MIRA 14:3)

(Moscow Province--Nun moth)

BENKEVICH, V.I.

Forecasting mass outbreaks of the oak leaf roller (Tortrix viridana L.) in Moscow Province. Nauch. dokl. vys. shkoly; biol. nauki no. 1:16-20 '61. (MIRA 14:2)

1. Rekomendovana kafedroy zoologii Orekhovo-Zuyevskogo pedagogicheskogo instituta.
(MOSCOW PROVINCE—LEAF ROLLERS) (OAK—DISEASES AND PESTS)

BENKEVICH, V.I.

Forecasting mass outbreaks of the apple ermine moth (Hyponomeuta malinellus Zell.) in Moscow Province. Zool. zhur. 40 no.8:1164-1171 Ag '61. (MIRA 14:8)

1. Pedagogical Institute of Orekhovo-Zuevo.
(Moscow Province--Moths) (Apple--Diseases and pests)

BENKEVICH, V.I.

Studies on the biology of the gypsy moth (Ocneria dispar L.). Sbor. rab. po ekol. i sist. zhiv. no.1:31-51 '59. (MIRA 15:1)
(Gypsy moth)

BENKEVICH, V.I.

Effect of temperature on the development of gypsy moth embryos (Ocneria dispar L.) in Moscow Province. Sbor. rab. po ekol. i sist. zhiv. no.1:52-61 '59. (MIRA 15:1)
(Moscow Province--Gypsy moth) (Insects--Development)
(Temperature--Physiological effect)

BENEVICH, V.I.

Biology and ecology of the tick Dermacentor silvarum Olen. in the Teletskoye area of the Gornyy Altai. Stor. rat. po ekol. i sist. zhiv. no.1:62-72 '59. (MIRA 15:1)
(Teletskoye Lake region--Ticks)

BEINHARD, A.

Recent development of passenger-traffic buildings. p.315.

MAGYAR EPITOIPAR. Budapest, Hungary. Vol. 8, no. 6, June 1959.

Monthly List of East European Accessions (EEAI), LC. VOL. 8, No. 9, September 1959. Uncl.

[illegible], I.A., kandidat [illegible] nauk; [illegible]; [illegible], A., aspirant

Verticillium infection of [illegible] leaves. Zashch. rast. ot vred. i bol. 9 no.10:15-16 '64 (MIRA 18:1)

1. Vsesoyuznyy institut [illegible] rasteniy (for [illegible]). 2. Sredneaziatskiy institut [illegible] rasteniy (for [illegible]).